

# Distribution of Hospital Nursing Services

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**T**HE NEED FOR more nurses in hospitals is a familiar problem. As a result, sometimes hospital beds have been closed, but more often the available nursing services have been spread more thinly over the existing patient load. The American Hospital Association reports that at the end of 1951, nearly 14,000 hospital beds were closed for lack of personnel and that job vacancies existed for 22,486 graduate nurses (1), 10 percent of the total number already employed in hospitals. These data, collected by the American Hospital Association, cannot be used to show the amount of nursing care patients are receiving, but data from the 1951 American Medical Association's census of registered hospitals can be used for this purpose, and so round out the picture.

The American Medical Association has made available to the Public Health Service unpublished data on patient census and nursing personnel, which show the geographic locations and hospital types in which those patients are concentrated who are receiving less care than the nursing profession's standards recommend. Such standards have been set forth for three distinct types of hospitals: general and allied special, nervous and mental, and tuberculosis. For general and tuberculosis hospitals the standards are in terms of hours of care per patient-day, and for mental hospitals they are in terms of a nurse-patient ratio. While the nursing profession recognizes that these stand-

ards are not based on adequate data, they are the only guidelines available at this time. The standards are in fairly general use pending the results of studies now under way or contemplated.

Nurse-patient ratios have been computed for each type of hospital from data supplied by the the American Medical Association. The nursing personnel included in these ratios are limited to nurses available to give direct care to patients. General duty nurses are the only professional nurses included. The nonprofessional personnel include practical nurses, attendants, nurses' aides, and orderlies. The care given by student nurses is excluded from the nurse-patient ratios developed from the American Medical Association data. The personnel counts are as of a particular day in October 1951, while the number of patients was counted as the daily average patient census for the most recent 12-month period for which data were available at that time. An adjustment is made for part-time general duty nurses so that personnel counts would be on a full-time basis. No adjustments are made for care given by private duty nurses, and to offset this, no adjustments are made for newborn census.

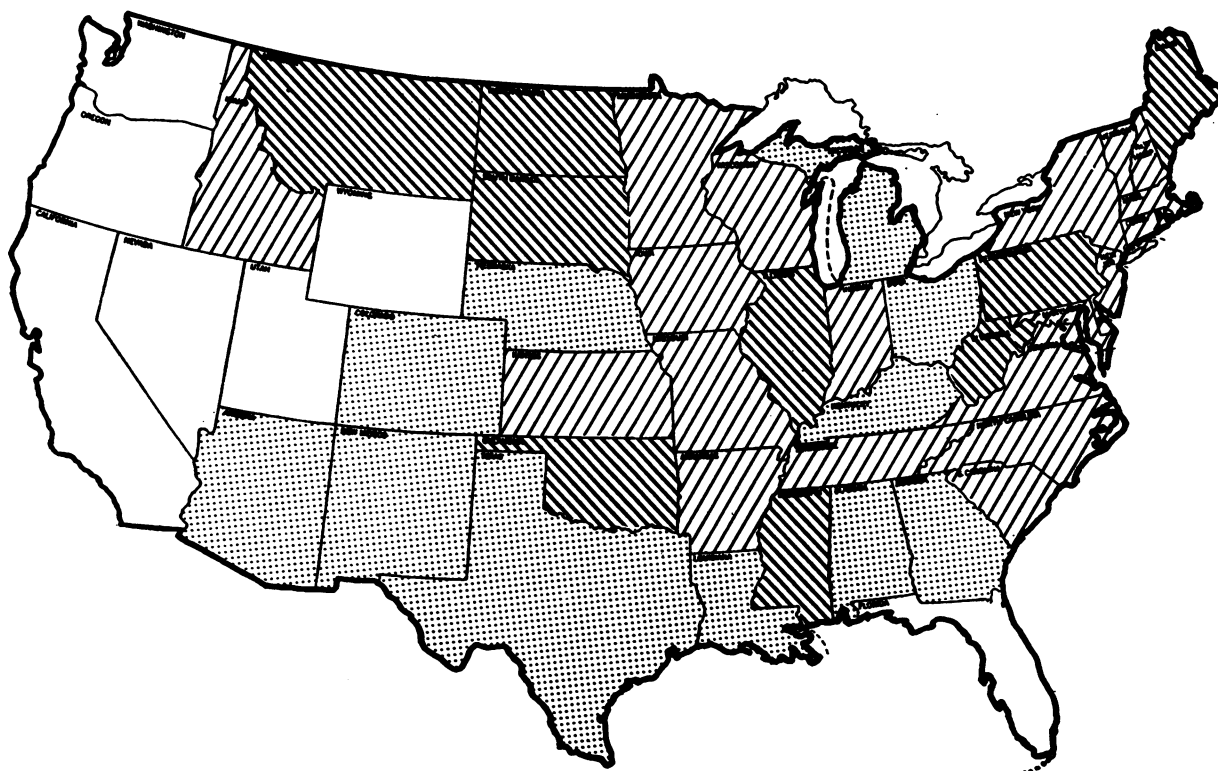
The ratios computed from the data for hospitals registered by the American Medical Association have been converted by a very simple process into estimates of average hours of care received by patients: For hospitals whose nurses work an average of 44 hours a week and 48 weeks a year, the average hours of care per patient-day is one-seventeenth of the number of nursing personnel per 100 patients. For hospitals that average a 40-hour week, the average hours of care is one-nineteenth of the ratio. For example:

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Figure 1. Estimated daily hours of total nursing care per patient in nongovernmental general hospitals, 1951.



**Estimated Daily Hours of Care  
44-Hour Work Week**



In States where nurses work 40 hours a week, each nurse works 1,920 hours per year ( $40 \times 48$ ). The number of patient-days per year is the product of 365 multiplied by the daily average patient census. If we let  $R$  stand for the number of nursing personnel per 100 patients,  $C$  stand for the average hours of care per patient-day,  $NP$  for the total number of nursing personnel, and  $DAPC$  for the daily average patient census, the following relationships can be stated:

$$(1) R = \frac{100NP}{DAPC} = 100 \frac{(NP)}{(DAPC)}$$

$$(2) C = \frac{1920NP}{365DAPC} = \frac{1920}{365} \frac{(NP)}{(DAPC)}$$

$$(3) \frac{R}{100} = \frac{NP}{DAPC} \text{ (from 1 above)}$$

$$(4) C = \frac{1920}{365} \times \frac{R}{100} = \frac{R}{19}$$

Data are shown in this report in terms that make them comparable to professional standards for nursing service for each of the three types of hospitals. Comparisons are made be-

tween the staffing of Federal hospitals, other governmental hospitals (includes those administered by the Bureau of Indian Affairs), and nongovernmental hospitals for each of the three types of service. Where figures are quoted in terms of hours of care given, they are based on the assumption that nurses in Federal hospitals work a 40-hour week and that nurses in other hospitals average a 44-hour week.

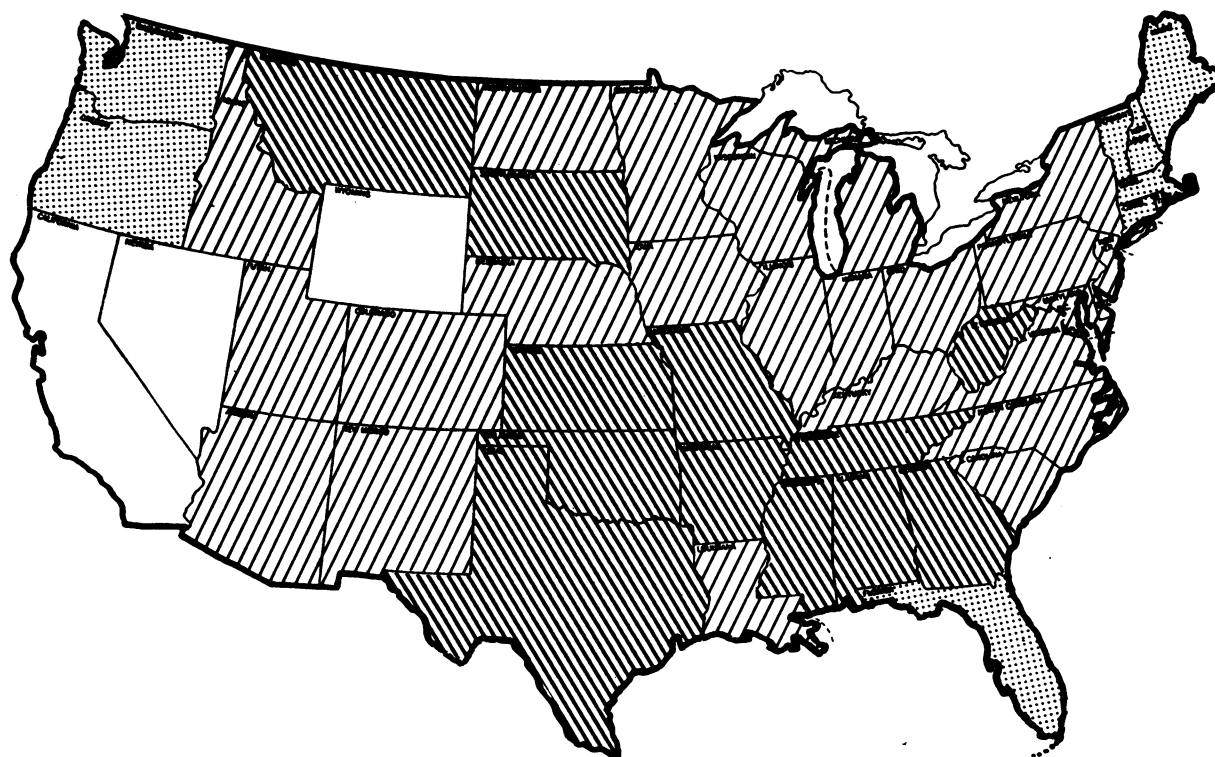
**General and Allied Special Hospitals**

The variations in hours of nursing care per patient-day available in hospitals under different types of control and the number of patients affected are as follows:

Control	Patients (in thousands)	Hours of care <sup>1</sup>	
		Total	Professional
Federal.....	96	2.1	0.7
Other governmental...	119	2.8	.9
Nongovernmental.....	294	3.6	1.6

<sup>1</sup> Reference 9.

**Figure 2. Estimated daily hours of professional nursing care per patient in nongovernmental general hospitals, 1951.**



**Estimated Daily Hours of Care  
44-Hour Work Week**



This picture of the situation in general hospitals shows that patients in Federal hospitals and those in other governmental hospitals are receiving not more, but actually less, nursing care than are patients in nongovernmental hospitals.

The average length of stay of patients in Federal hospitals is about three times as long as in nongovernmental hospitals. Long-term patients usually need less nursing care than short-term patients. However, obstetrical cases make up about one-fifth of the admissions to nongovernmental hospitals and only one-fifteenth of the admissions to Federal hospitals, and such cases are characterized by shorter than average stay and less than average acuity. Furthermore, in Public Health Service hospitals (data are not at hand for other Federal hospitals), the median length of stay is only about one-half the average stay; and of the 80 percent of patients who are discharged in less than 1 month the

average stay is considerably less than one-half the average stay of all patients.

If an adjustment were made for the care given by student nurses, the difference between the amounts of nursing care available to patients in governmental hospitals of both types and those in nongovernmental hospitals would be more pronounced.

Information from other sources indicates that on a national basis student nurse care averages about 0.5 hour per day for each patient in general hospitals, and that 86 percent of it is concentrated in the nongovernmental hospitals. The breakdown of these figures follows:

State surveys made by the Division of Nursing Resources, Public Health Service, corroborated by evidence from the 1950 list of State Approved Schools of Nursing, indicate that a student nurse gives care to patients .4 as many hours as a graduate nurse employed on a full-time basis by the hospital. This means that the 102,500 students enrolled on January 1, 1951, were spending as many hours giving care to

patients as 41,000 full-time nurses employed by the hospitals, or 86,592,000 hours a year, based on average personnel policies in nongovernmental hospitals. The 509,446 patients in general and allied special hospitals received 185,947,790 days of care in the year, or .47 hours per patient-day from student nurses.

The concentration of student care in nongovernmental hospitals can be inferred by the control of the hospitals operating the schools in which the students are enrolled. Of the 97,903 students reported in *Facts About Nursing* to have been enrolled in schools of nursing January 1, 1950, 13,561 were enrolled in schools operated by Federal, State, city, county, or city-county hospitals. The control of the hospitals with schools was determined from the list of hospitals registered by the American Medical Association, and their enrollments from the 1950 list of State Approved Schools of Nursing.

A conservative estimate is that patients in nongovernmental hospitals probably average .4 hour of care daily by student nurses, which brings the total hours of care they are receiving up to 4 a day, about one-half of it being professional.

The average staffing of nongovernmental hospitals, computed by totaling personnel and patients in this entire group of hospitals, appears to meet the standards set by the nursing profession in 1948 with respect to total hours of nursing care although not in number of professional nursing hours. A study published by the National League of Nursing Education in that year indicated that each patient should have 3.5 hours of care per day, with 2.4 of these hours provided by professional nurses (7).

A more recent study indicates that under specified conditions of assignment and supervision professional care may be sufficient if it is one-third of the total (6), and another shows that patients on active medical and surgical service require 3.9 hours of care (10). A definitive study is needed now to relate amounts of nursing service to the demands of modern medical practice, but in the last analysis each hospital has, and will continue to have, different requirements.

The staffing ratios presented here are averages for large groups of hospitals; and hence, as would be expected, many hospitals in any group will have ratios lower than the group average. The extent to which nongovernmental hospitals fail to meet the standards of the nursing profession for general hospitals is sketched

in briefly following the discussion of geographic variations.

### Nervous and Mental Hospitals

Patients are distributed among the three classes of nervous and mental hospitals in inverse relationship to the amounts of nursing care available:

Control	Patients (in thousands)	Nursing personnel per 100 patients <sup>1</sup>	
		Total	Professional
Federal.....	60	26.2	2.9
Other governmental...	621	11.5	.3
Nongovernmental.....	17	33.9	4.2

<sup>1</sup> Reference 9.

In contrast to the situation in general hospitals, patients in Federal mental hospitals are receiving considerably more care than patients in other governmental hospitals. It remains true that patients in nongovernmental mental hospitals are receiving the most care.

The standard approved by the American Psychiatric Association in 1945 for staffing mental hospitals called for 4 professional nurses per 100 patients, and 25 nonprofessional nursing personnel (4). The great majority of mental patients in the hospitals operated by States and other local governments thus is receiving less than one-tenth the professional nurse care and only two-fifths of the total amount of care considered essential.

While on the face of it, the average staffing ratios of nongovernmental mental hospitals appear to meet the standards quoted, it must be realized that these hospitals generally are undertaking intensive therapy for a much larger proportion of their patients than the State mental hospitals for which the standards were designed. The American Psychiatric Association has since developed a more discriminating set of standards, but they can be used only in a situation in which something is known of the condition of the patients in addition to their total number (3).

### Tuberculosis Hospitals

The patient with tuberculosis receives the most care in a Federal hospital, and the least care if he is in a nongovernmental hospital:

**Table 1. Average hours of nursing care by all types of nursing personnel, except student nurses, per patient-day and distribution of hospitals according to actual hours provided: nongovernmental general hospitals in 8 States**

State	Average hours	Hospitals distributed by actual hours care					
		Total	Less than 2.0	2.0-2.9	3.0-3.9	4.0-4.9	5.0 and over
Arizona.....	4.3	11	-----	1	3	3	4
District of Columbia.....	4.2	12	-----	1	5	5	1
Maine.....	3.2	28	3	3	12	7	3
Nebraska.....	3.9	71	1	11	25	12	22
New Mexico.....	3.8	18	1	4	6	2	5
South Dakota.....	2.9	35	2	6	15	7	5
Vermont.....	3.4	18	1	6	3	6	2
West Virginia.....	3.1	48	2	8	21	14	3

Control	Patients (in thousands)	Hours of care <sup>1</sup>	
		Total	Professional
Federal.....	8	1.8	0.6
Other governmental....	58	1.4	.2
Nongovernmental.....	8	1.2	.2

<sup>1</sup> Reference 9.

On the basis of standards of the Tuberculosis Advisory Nursing Service, even the better staffed Federal tuberculosis hospitals are short of professional nurses (5). These standards are based upon the regimen prescribed for patients, that is, whether the patient is on strict bed rest, bed rest, or is semiambulant, or ambulant. To obtain a single figure from these four standards so that comparison could be made with existing staffing practices, the nursing requirement of patients in each category was weighted by the probable proportion of all patients in the category. The weighted average nursing requirements of tuberculosis patients amounts to

a total of 1.8 hours of care per day, .9 hour of which should be professional nurse care.

### Geographic Variations

All of the figures cited so far have been national averages. It is reasonable enough to use national averages when discussing Federal hospitals since their centralized administration means that there is relatively little local variation in staffing ratios.

What justification is there, however, for computing a single ratio by combining data for 48 States from Arkansas to Maine and from Georgia to California? A comparison of the ratios for nongovernmental general hospitals across the country suggests part of the answer (9). Figure 1 shows some geographic variations in the ratios of total nursing personnel to patients. The ratios have been grouped into

**Table 2. Average hours of care by graduate nurses per patient-day, and distribution of hospitals according to actual hours provided: nongovernmental general hospitals in 8 States**

State	Average hours	Hospitals distributed by actual hours care					
		Total	Less than 2.0	2.0-2.9	3.0-3.9	4.0-4.9	5.0 and over
Arizona.....	1.9	11	1	3	3	-----	4
District of Columbia.....	2.2	12	-----	4	3	5	-----
Maine.....	2.0	28	6	3	2	5	12
Nebraska.....	1.5	71	14	16	22	11	8
New Mexico.....	1.6	18	3	8	2	2	3
South Dakota.....	1.1	35	12	8	5	5	5
Vermont.....	2.2	18	1	3	2	5	7
West Virginia.....	1.1	48	14	22	8	4	-----

**Table 3. Nongovernmental general hospitals with schools of nursing distributed according to hours of care provided per patient-day by student nurses in 8 States**

State	Total hospitals	Hours care by student nurses				
		Less than 1.0	1.0-1.4	1.5-1.9	2.0-2.4	2.5 and over
Arizona.....	5		1	3	1	
District of Columbia.....	5	4		1		
Maine.....	4		2	2		
Nebraska.....	12	5	4	3		
New Mexico <sup>1</sup> .....						
South Dakota.....	9		5	2	2	
Vermont.....	6	2	2	1	1	
West Virginia.....	19	5	7	6	1	

<sup>1</sup> Only one hospital operates a school of nursing, and to avoid disclosing confidential information, data are not shown.

four classes for mapping purposes. The States with the lowest ratios have fewer than 55 nursing personnel of all types available to care for each 100 patients. This means that in these States if nurses work 44 hours per week, patients can receive an average of less than 3.2 hours of care per day. Patients in the next higher States can receive 3.2 to 3.7 hours; in the next to the highest group of States they can receive 3.8 to 4.0 hours, and in the highest States, 4.1 hours or more are available.

Figure 2 shows similar variations in graduate professional nurse to patient ratios. In the States with the lowest ratios, fewer than 22 graduate professional nurses care for each 100 patients. That is, patients in these States can average less than 1.3 hours professional nurse care each day. Patients in the next group of States can average 1.3 to 1.9 hours professional nurse care daily, in the next higher group, 2.0

to 2.5 hours, and in the most privileged States they can average 2.6 hours or more.

#### Interhospital Differences

It cannot be inferred that a State whose average nurse-patient ratios provide for amounts of care that meet professional standards has all the nurses it needs in its hospitals. Nurses are not distributed among all hospitals in proportion to the number of their patients, and no assumption is made that this should be so (tables 1 and 2). Admittedly, the patients in some hospitals need more care while those in other hospitals may need less, depending upon the conditions for which they are being treated, the nature of the treatment, and the hospital's program.

The safest assumption probably would be that the patients in any general hospital need at

**Table 4. Hospitals distributed according to total hours of care provided per patient-day, including care given by student nurses: nongovernmental general hospitals in 8 States**

State	Total hospitals	Total hours care				
		Less than 2.0	2.0-2.9	3.0-3.9	4.0-4.9	5.0 and over
Arizona.....	11		1	3	3	4
District of Columbia.....	12			6	5	1
Maine.....	28	2	4	9	7	6
Nebraska.....	71	1	7	22	18	23
New Mexico.....	18	2	4	6	2	4
South Dakota.....	35	2	8	12	8	5
Vermont.....	18		1	8	7	2
West Virginia.....	48	2	11	20	10	5

least the amount of care that would be equivalent to the nursing profession's 1948 standard for total hours of care and Bredenberg's standard for hours of professional nurse care. The corollary of this assumption is that hospitals providing more hours of care than this do so either because of the kind of care their patients need, out-of-date facilities for care, awkward administrative procedures, educational programs for student nurses or medical students, or for a variety of other possible reasons. Thus, in Nebraska, although the State average meets professional standards for total hours of care, at least 12 hospitals could be considered inadequately staffed.

Differences in the extent to which student nurses give patient care show up in table 3. Table 4, when compared with table 1, shows how including the care given by students in the total hours affects the picture of the amount of care patients are receiving.

### Summary

1. The ratio of nursing personnel to patients in the entire group of nongovernmental general hospitals in the country is sufficient to provide an average of 3.6 hours of care, 1.6 hours of this being professional. Nevertheless, numerous hospitals in every State need more of both categories of nurses even where statewide ratios are at the national average. Only in the Pacific coast States and in Nevada, Wyoming, and Florida do patients in general hospitals appear to be receiving an average amount of both professional and nonprofessional nursing care that is up to minimum professional standards. In the New England States the average amount of professional nursing care appears to be sufficient, but hospitals in this area perhaps should employ more nonprofessional nursing personnel. In all of the remaining States there appear to be too few graduate nurses in the general hospitals.

2. All general hospitals under governmental control of any sort appear to be short of both professional and nonprofessional nursing personnel, although the longer average length of stay in Federal hospitals modifies the picture to some extent.

3. In the mental hospital field, only those under nongovernmental auspices come close to meeting the staffing standards of the nursing profession, and these hospitals care for only 17,000 of the 698,000 patients in this kind of institution.

4. Tuberculosis hospitals in all three classes appear to be grossly understaffed with respect to both professional and nonprofessional nurses.

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